

WHAT IS CLAIMED IS:

1. A multi-component liquid filter, comprising:
a first filter element defining a surface having a finite surface
contact area, said first filter element being configured to selectively
remove a first contaminant from a liquid when contacted therewith; and
a second filter element disposed in fluid communication with said
first filter element, said second filter element having a generally non-planar
surface, said generally non-planar surface having a surface contact area
greater than said surface contact area of said first filter element, said
second filter element being configured to selectively remove a second
contaminant from a liquid when contacted therewith.

2. A multi-component liquid filter as defined in claim 1, wherein
said surface of said first filter element is a generally planar surface.

3. A multi-component liquid filter as defined in claim 1, wherein
said generally non-planar surface is a pleated surface.

4. A multi-component liquid filter as defined in claim 3, wherein
said pleated surface comprises pleats having an average pitch from about
0.0625 to about 5 inches.

5. A multi-component liquid filter as defined in claim 3, wherein
said pleated surface comprises pleats having an average pitch from about
0.125 to about 1 inch.

6. A multi-component liquid filter as defined in claim 3, wherein
said pleated surface comprises pleats disposed longitudinally in a
direction transverse to fluid flow through said second filter element.

7. A multi-component liquid filter as defined in claim 1, wherein
both of said filter elements are contained within a chamber.

8. A multi-component liquid filter as defined in claim 7,
wherein said first and said second filter elements are generally
cylindrical, said generally cylindrical filter elements being arranged

9. A multi-component liquid filter as defined in claim 8, wherein one of said first and second filter elements has inner and outer circumferential surfaces defined by a generally constant radius therearound so as to define generally continuous planar circumferential filtering surfaces for a liquid passing radially through said filter element, the other of said
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respective filter elements having inner and outer circumferential surfaces defined by surface contours such that said circumferential surfaces have a non-constant radius therearound so as to define a generally discontinuous non-planar circumferential filtering surface with a greater effective filtering
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surface area compared to a continuous planar filtering surface for a liquid passing radially through said other filter element, wherein liquid flows radially through said filter elements within said chamber such that different contaminants are removed by said respective filter elements prior to the liquid flowing from said chamber.

10. A multi-component liquid filter as defined in claim 9, wherein said filter element with said constant radius circumferential surfaces is disposed concentric within said other filter element having said surface contours.

11. A multi-component liquid filter as defined in claim 9, wherein said other filter element with said surface contours is disposed concentric within said filter element with said constant radius circumferential surfaces.

12. A multi-component liquid filter as defined in claim 1, wherein at least one of said filter elements comprises a material selected from the group consisting of microfiber glass, a charge-modified material, a nonwoven web, a bed of granular material, a cellulosic material, a particulate laminate, activated carbon, airlaid composites, and
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combinations thereof.

13. A multi-component liquid filter as defined in claim 1, wherein at least one of said filter elements comprises a particulate laminate having a

layer containing activated carbon laminated to at least one other layer containing a nonwoven web.

50 50 14. A multi-component liquid filter as defined in claim 1, wherein said surface contact area of said second filter element is at least about 10% greater than said surface contact area of said first filter element.

15. A multi-component liquid filter as defined in claim 1, wherein said surface contact area of said second filter element is about 15% to about 600% greater than said surface contact area of said first filter element.

10 16. A multi-component liquid filter, comprising:

a first filter element having a generally planar surface, said generally planar surface having a certain surface contact area, said first filter element comprising a material configured to selectively remove a first contaminant;

15 a second filter element disposed adjacent to said first filter layer, said second filter element comprising a material that is configured to selectively remove a second contaminant selected from the group consisting of turbidity-related components, sediment, organic materials, particulates, microorganisms, and combinations thereof; and

20 said second filter element having a pleated surface, said pleated surface having a surface contact area at least about 10% greater than said surface contact area of said generally planar surface of said first filter element.

25 17. A multi-component liquid filter as defined in claim 16, wherein said surface contact area of said second filter element is between about 15% to about 600% greater than said surface contact area of said first filter element.

18. A multi-component liquid filter as defined in claim 16, wherein said pleated surface comprises pleats having an average pitch from about 0.0625 to about 5 inches.

19. A multi-component liquid filter as defined in claim 16, wherein said pleated surface comprises pleats having an average pitch from about 0.125 to about 1 inch.

20. A multi-component liquid filter as defined in claim 16, wherein at least one of said filter elements comprises a material selected from the group consisting of microfiber glass, a charge-modified material, a nonwoven web, a bed of granular material, a cellulosic material, a particulate laminate, activated carbon, airlaid composites, and combinations thereof.

21. A multi-component liquid filter as defined in 16, wherein both of said filter elements are contained within a chamber.

22. A multi-component liquid filter as defined in claim 21, wherein said first and said second filter elements are generally cylindrical, wherein said generally cylindrical filter elements are arranged in fluid communication within said chamber coaxial with respect to a longitudinal centerline of said chamber.

23. A multi-component liquid filter device, comprising:
a chamber;
a first generally cylindrical filter element, and a second generally cylindrical filter element, said filter elements arranged in fluid communication within said chamber coaxial with respect to a longitudinal centerline of said chamber;

one of said first and second filter elements having inner and outer circumferential surfaces defined by a generally constant radius therearound so as to define generally continuous planar circumferential filtering surfaces for a liquid passing radially through said filter element;

the other of said respective filter elements having inner and outer circumferential surfaces defined by surface contours such that said circumferential surfaces have a non-constant radius therearound so as to define a generally discontinuous non-planar circumferential filtering surface with a greater effective filtering surface area compared to a continuous planar filtering surface for a liquid passing radially through said other filter element; and

wherein liquid flows radially through said filter elements within said chamber such that different contaminants are removed by said respective filter elements prior to the liquid flowing from said chamber.

24. A filter device as defined in claim 23, wherein said surface contours of said other filter element comprise surface elevations and depressions.

25. A filter device as defined in claim 24, wherein said elevations and depressions are in a uniform repeating pattern.

26. A filter device as defined in claim 24, wherein said elevations and depressions comprise pleats. A

27. A filter device as defined in claim 26, wherein said pleats have an average pitch from about 0.0625 inches to about 5.0 inches.

28. A filter device as defined in claim 26, wherein said pleats have an average pitch from about 0.125 inches to about 1.0 inch.

29. A filter device as defined in claim 23, wherein said filter element with said constant radius circumferential surfaces is disposed concentric within said other filter element having said surface contours.

30. A filter device as defined in claim 23, wherein said other filter element with said surface contours is disposed concentric within said filter element with said constant radius circumferential surfaces.

31. A filter device as defined in claim 23, wherein at least one of said filter elements comprises a material selected from the group

consisting of microfiber glass, a charge-modified material, a nonwoven web, a bed of granular material, a cellulosic material, a particulate laminate, activated carbon, airlaid composites, and combinations thereof.

32. A filter device as defined in claim 23, wherein at least one of said filter elements comprises a particulate laminate having a layer containing activated carbon laminated to at least one other layer containing a nonwoven web.

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